UNITED STATES DISTRICT COURT
DISTRICT OF MAINE

UNITED STATES OF AMERICA	)	
	)	
v.	)	1:13-cr-00133-JAW
	)	
ALAN KETCHEN,	)	
RYAN ELLIS, and	)	
JACOB GAGNON	)	

ORDER ON TREATMENT OF 3,4 METHYLENEDIOXYPYROVALERONE UNDER UNITED STATES SENTENCING GUIDELINES AND REQUEST FOR JOINT PRESENTENCE CONFERENCE

Alan Ketchen, Ryan Ellis, and Jacob Gagnon request that the Court not treat 3,4-Methylenedioxypyrovalerone (MDPV) as an analogue of methcathinone for the purposes of determining drug quantity and base offense level. Mr. Ellis and Mr. Gagnon further request that the Court treat MDPV as pyrovalerone for the period before MDPV was listed on Schedule I, and that the Court use pyrovalerone, not methcathinone, to calculate their drug quantity and base offense level, on the ground that MDPV is more closely related to pyrovalerone. The Court denies the Defendants' requests and concludes that MDPV is a controlled substance analogue of methcathinone. The Court grants the parties' request for a joint pre-sentence conference.

I. PROCEDURAL BACKGROUND

On July 17, 2013, a federal grand jury indicted Mr. Ellis, Mr. Ketchen, and Mr. Gagnon on one count of knowingly and intentionally conspiring to distribute and possess with intent to distribute MDPV, classified as a controlled substance analogue

prior to October 21, 2011, and classified as a Schedule I controlled substance after October 21, 2011, all in violation of 21 U.S.C. §§ 813, 841(a)(1). *Indictment* at 1-3 (ECF No. 1).[1] On May 7, 2014, June 17, 2014, and June 27, 2014, Mr. Ketchen, Mr. Ellis, and Mr. Gagnon, respectively, pleaded guilty to that count of the indictment. *Minute Entry* (ECF Nos. 374, 426, 438).

On October 27, 2014, November 17, 2014, and December 18, 2014, the Government filed sentencing memoranda regarding Mr. Ellis, Mr. Gagnon, and Mr. Ketchen, respectively. *Gov't's Mem. in Aid of Sentencing* (ECF Nos. 531, 546, 595) (*Gov't's Mem.*). On January 23, 2015, Mr. Gagnon filed his sentencing memorandum. *Def.'s Mem. in Aid of Sentencing* (ECF No. 636) (*Gagnon Mem.*). That same day, Mr. Ellis filed his sentencing memorandum. *Def.'s Mem. in Aid of Sentencing* (ECF No. 637) (*Ellis Mem.*). On January 30, 2015, the Government filed its reply to Mr. Gagnon's memorandum. *Gov't's Reply Mem. in Aid of Sentencing* (ECF No. 639) (*Gov't's Reply to Gagnon*). That same day, the Government filed its reply to Mr. Ellis' memorandum. *Gov't's Reply Mem. in Aid of Sentencing* (ECF No. 640) (*Gov't's Reply to Ellis*). On February 9, 2015, Mr. Ketchen filed his sentencing memorandum. *Def. Alan Ketchen's Mem. in Support of Sentencing* (ECF No. 643) (*Ketchen Mem.*). On February 11, 2015, the Government filed its reply to Mr. Ketchen's memorandum. *Gov't's Reply Mem. in Aid of Sentencing and Request for Joint Pre-Sentence Conference* (ECF No. 645) (*Gov't's Reply to Ketchen*).

[1] The Defendants were also individually indicted for offenses not the subject of this Order.

On April 23, 2015, the Court issued an order on Mr. Ellis' Offer of Proof. *Order on Offer of Proof* (ECF No. 673) (*Offer of Proof Order*). In his memorandum, Mr. Ellis stated that he was "prepared to offer further expert evidence at a hearing to establish that MDPV is not only an analogue to pyrovalerone, but that it is more closely related to pyrovalerone than it is to methcathinone." *Ellis Mem.* at 3. To give Mr. Ellis an opportunity to present this proffered evidence, the Court ordered Mr. Ellis to present a synopsis of what his expert would testify, if called as a witness. *Offer of Proof Order* at 1. Although Mr. Ellis timely filed his expert's curriculum vitae on April 30, 2015, he moved to extend the time to supply his expert's opinion to May 29, 2015. *Mot. to Enlarge Time to File Detailed Expert Report* (ECF No. 685). On May 1, 2015, the Court reluctantly granted the motion. *Order on Mot. to Enlarge Time to File Detailed Expert Report* (ECF No. 687). On May 29, 2015, Mr. Ellis filed his expert report. *See Offer of Proof* Attach. 1, *Curriculum Vitae of Heather L. Harris* (ECF No. 686-1) (*Harris C.V.*); *Report in the Matter of U.S. v. Ryan Ellis, 1:13-CR-00133-JAW* (ECF No. 704) (*Harris Report*). The Court inquired as to whether the Government intended to present a rebuttal to the Harris report and the Government declined to do so.

II. THE PARTIES' POSITIONS

A. The Government's Sentencing Memorandum[2]

The Government focuses its sentencing arguments on the conspiratorial period before October 21, 2011, when MDPV was not yet a listed controlled substance and

[2] The Government submitted three sentencing memoranda in this case, ECF Nos. 531, 546, and 595, and made essentially identical arguments with respect to MDPV quantity calculations for the purposes of sentencing. For ease, the Court uses the Government's memorandum in Mr. Ketchen's case found at ECF No. 595, when citing the memorandum.

argues that, for sentencing purposes, methcathinone should be considered the "most closely related controlled substance" to MDPV.[3] *Gov't's Mem*. at 2-5. It points out that MDPV is not listed in the United States Sentencing Commission, Guidelines Manual (USSG) Drug Equivalency Table, and therefore the drug quantity should be calculated by using the marijuana equivalency of the most closely related controlled substance referenced in the guidelines. *Id*. at 2.

The Government argues that under both federal statute and federal sentencing guidelines, MDPV must be compared to either a Schedule I or II drug in calculating the Defendants' base offense level at sentencing. *Id*. at 3-7. The Government submits that under federal statute, a "controlled substance analogue" is defined as a substance that has either a "substantially similar" chemical structure as a Schedule I or II controlled substance, or a "substantially similar to or greater than" stimulant, depressant, or hallucinogenic effect on the central nervous system as a Schedule I or II controlled substance. *Id*. at 3. The Government asserts that the guidelines likewise require the Court to compare MDPV to either a Schedule I or II drug because the guidelines adopt the statutory definition of "controlled substance analogue". *Id*. at 3-4.

In anticipation of the Defendants' argument that MDPV should be compared to pyrovalerone, the Government points out that methcathinone is a Schedule I drug whereas pyrovalerone is a Schedule V drug, and that methcathinone is referenced in the sentencing guidelines whereas pyrovalerone is not. *Id*. at 5-6. The Government

[3] MDPV was listed in Schedule I on October 21, 2011, and none of the Defendants has argued that MDPV was improperly scheduled.

argues that USSG § 2D1.1 and related commentary in Application Note 6 require the Court to determine "the most closely related controlled substance" to MDPV. *Id.* at 5. The Government maintains that methcathinone is most closely related to MDPV because it is structurally similar and has a substantially similar pharmacological effect as MDPV. It offers the grand jury testimony of a chemist and a drug science specialist, both employed by the U.S. Drug Enforcement Agency (DEA), as evidence that the two compounds share similar chemical structures and have similar effects on the central nervous system.[4] *Id.* at 7-8. The Government asserts that a disconnect that would occur if MDPV was treated as a Schedule V drug before October 21, 2011, but later was listed in Schedule I. *Id.* at 6. The Government argues that this treatment would also be inconsistent with Congress's intent. *Id.*

B. Alan Ketchen's Sentencing Memorandum

Mr. Ketchen acknowledges that he pleaded guilty to conspiracy to distribute and possess with intent to distribute controlled and analogue substances, but he maintains that USSG § 2D1.1 Application Note 6 does not expressly apply because MDPV was not listed as a controlled substance before October 21, 2011, and because the Application Note 6 analysis applies only to "controlled substances not referenced in the guidelines". *Ketchen Mem.* at 2-3 (emphasis in original). He recognizes that the determination of whether MDPV was a controlled substance or a controlled substance analogue at that time impacts the application of the guidelines. *Id.* at 3.

[4] The Government and the Defendants agree that in making its ruling, the Court may consider their exhibits. The Court admits Government Exhibits 1 through 5, *Gov't's Amended Sentencing Ex. List* (ECF No. 641), and Defendant Ellis' Exhibit 1, *Ellis Mem.*, Attach. 1, for purposes of this Order.

He "suggests leniency in the [§] 2D1.1 calculation", *id.* at 2, because there is insufficient evidence to support the comparison of MDPV to methcathinone, and because "the definition of analogue is rife with ambiguity." *Id.* at 4.

C. The Government's Reply to Mr. Ketchen's Memorandum

The Government asserts that it has provided the Court with "ample evidentiary basis" to conclude that methcathinone should be used to calculate the guideline in this case. *Id.* at 2. Additionally, the Government contends that the rule of lenity should not apply in this case, and even if it did, Mr. Ketchen waived that argument when he acknowledged on the record that MDPV is a controlled substance analogue. *Id.* at 2-3.

D. Ryan Ellis' Sentencing Memorandum

Mr. Ellis states that because MDPV is not listed in USSG § 2D1.1(c), Application Note 6 applies and provides that the base offense level should be determined using the "most closely related" controlled substance referenced in the guideline. *Ellis Mem.* at 1. Mr. Ellis asserts that "there is some debate" regarding which controlled substance is most closely related to MDPV. *Id.* at 2. He points to an article authored by two DEA Special Testing and Research Laboratory scientists that says "MDPV is the methlenedioxy analogue of Pyrovalerone, a Schedule V stimulant first synthesize[d] in 1964."[5] *Id.* (quoting *Yohannan Article* at 12). Mr.

[5] The article, entitled "The Characterization of 3,4-Methylenedioxypyrovalerone (MDPV)" was written by Joshua C. Yohannan and Joseph S. Bozenko, Jr., and was published in the March 2010 edition of Microgram Journal. *Ellis Mem.* Attach. 1, Joshua C. Yohannan & Joseph S. Bozenko, Jr., *The Characterization of 3,4-Methylenedioxypyrovalerone (MDPV)*, 7 MICROGRAM J. 12-15 (Mar. 2010) (ECF NO. 637-1) (*Yohannan Article*). The article identifies the authors, Mr. Yohannan and Mr. Bozenko, as being affiliated with the United States Department of Justice, Drug Enforcement Administration, Special Testing and Research Laboratory in Dulles, Virginia. *Id.* at 12.

Ellis states that he is prepared to offer further expert evidence that MDPV is an analogue to pyrovalerone and more closely related to pyrovalerone than methcathinone. *Id.* at 3. He disputes the Government's claim that pyrovalerone cannot be considered an analogue to MDPV, arguing that using pyrovalerone to calculate the marijuana equivalent drug quantity of MDPV does not change the schedule of MDPV, it merely guides the Court in determining how to compare MDPV to other Schedule I controlled substances. *Id.* at 3-4. He states that even if both methcathinone and pyrovalerone are analogues to MDPV, the rule of lenity directs that Mr. Ellis be given the benefit of using pyrovalerone to calculate the drug quantity. *Id.* at 3. Finally, Mr. Ellis argues that he has a Sixth Amendment right to confront the Government's DEA witnesses.[6] *Id.*

E. The Government's Reply to Ryan Ellis' Memorandum

The Government asserts that in order to properly calculate the guidelines in this case, the Court "must equate [MDPV] to a drug that is *referenced* in the guidelines." *Gov't's Reply to Ellis* at 1 (emphasis in original). It points out that methcathinone is referenced in the guidelines, whereas pyrovalerone is not. *Id.* Furthermore, the Government maintains, the drafters of the commentary to § 2D1.1 could have endorsed the comparison of an analogue substance to any Title 21 controlled substance, but they did not do so. *Id.* at 2. The Government submits, therefore, that comparing MDPV to methcathinone is consistent not only with

[6] Although the Government does not respond to this argument in its reply brief, a "defendant's Sixth Amendment right to confront the witnesses against him does not attach during the sentencing phase . . . ." *United States v. Rodriguez*, 336 F.3d 67, 71 (1st Cir. 2003); *see also United States v. Luciano*, 414 F.3d 174, 178-80 (1st Cir. 2005) (collecting cases).

Congress's listing of MDPV as a Schedule I controlled substance, but also with existing caselaw and this Court's approach to sentencing other defendants in this conspiracy. *Id.*

Turning to the Yohannan article, the Government asserts that the article does not conclude that MDPV is a controlled substance analogue of pyrovalerone within the definition set forth in 21 U.S.C. § 802(32). *Id.* Furthermore, the Government points out, the article does not speak to what drug referenced in the guidelines is most closely related to MDPV. *Id.* at 3.

F. Jacob Gagnon's Sentencing Memorandum

Mr. Gagnon argues that Application Note 6 does not apply because MDPV was not a "controlled substance" before October 21, 2011. *Gagnon Mem.* at 1. He contends that the definition of "controlled substance" in 21 U.S.C. § 802(6) applies to this case, and that a "controlled substance" includes Schedule V substances under § 802(6). *Id.* at 2. Mr. Gagnon asserts that pyrovalerone is thus eligible for being compared with methcathinone to determine which substance is most closely related to MDPV. *Id.* at 2-4. He argues that the definition of "controlled substance analogue" under 21 U.S.C. § 802(32) is "rife with ambiguity" and insists that "in such cases, courts apply the rule of leniency to construe criminal statutes in favor of the defendant". *Id.* at 2. He urges the Court to conduct an evidentiary analysis to determine whether, as a factual matter, either methcathinone or pyrovalerone is "most closely related" to MDPV. *Id.* at 5.

G. The Government's Reply to Jacob Gagnon's Memorandum

The Government maintains that Application Note 6 provides that the definition of "controlled substance" includes any analogue of a controlled substance, and that Mr. Gagnon admitted that MDPV was a controlled substance analogue within the meaning of 21 U.S.C. § 802(32)(A). *Gov't's Reply to Gagnon* at 1. The Government argues that, for the purposes of sentencing, Mr. Gagnon has admitted that MDPV is the analogue of a Schedule I or II drug under § 802(32)(A). *Id.* The Government acknowledges that MDPV is not specifically referenced in the sentencing guidelines, but states that Application Note 6 provides that the Court calculate the bases offense level using the marijuana equivalency of the most closely related substance referenced in the guidelines. *Id.* at 1-2. Pyrovalerone, the Government states, is not referenced in the guidelines. *Id.* at 2. The Government maintains that the issue of whether MDPV can be compared to pyrovalerone is a question of law. *Id.* at 3.

III. FACTUAL AND STATUTORY BACKGROUND

A. The Indictment

When the grand jury charged Messrs. Ellis, Ketchen and Gagnon on July 17, 2013 with violating federal drug trafficking laws, the indictment contained some unusual language in Count One:

> Beginning on a date unknown, but no later than April 1, 2011 and continuing until a date unknown, but no earlier than December 31, 2011, in the District of Maine and elsewhere, defendants **RYAN ELLIS, a/k/a "Dude", "Calvin", "Piles"[;] AL:AN J. KETCHEN, a/k/a "AJ", "Hobbes"[;] . . . JACOB GAGNON, a/k/a "Jake the Snake" . . . .** knowingly and intentionally conspired with one another and with persons known and unknown to commit offenses against the United States, namely distribution and possession with intent to distribute: (1)

> prior to October 21, 2011, a mixture or substance containing a detectable amount of MDPV, a controlled substance analogue as defined in Title 21, United States Code, Section 802(32), with intent for human consumption as provided in Title 21, United States Code, Section 813; and (2) from October 21, 2011 until a date unknown, but no earlier than December 31, 2011, a mixture or substance containing a detectable amount of MDPV, a Schedule I controlled substance (by Final Order of DEA, 76 Fed. Reg. 65371, all in violation of Title 21, United States Code, Section 846, 841(a)(1), and 813.

Indictment at 3 (bold in original). What is unusual about this language is the distinction between events before and after October 21, 2011; this distinction drives the dispute in this case.

B. The Statutory Backdrop

1. Chapter 13 of Title 21: Drug Abuse Prevention and Control; Application to Post-October 21, 2011 Conduct

In the indictment, the Government charged Messrs. Ellis, Ketchen, and Gagnon with violating 21 U.S.C. § 841(a)(1), which makes illegal the knowing or intentional distribution or possession with the intent to distribute certain controlled substances. More specifically, the Government charged these Defendants with violating § 841(b)(1)(C), a provision that refers to "controlled substances in schedule I or II". *See* 21 U.S.C. § 841(b)(1)(C). Similarly, in § 802(6), the law defines "controlled substance" to mean "a drug or other substance, or immediate precursor, included in schedule I, II, III, IV, or V of part B of this subchapter." 21 U.S.C. § 802(6). The law grants the Attorney General of the United States the authority to add or remove drugs from a schedule after opportunity for a hearing. 21 U.S.C. § 811(a).

Effective October 21, 2011, the Administrator of the Drug Enforcement Administration listed 3,4-Methylenedioxypyrovalerone as a Schedule I controlled substance:

> **SUMMARY:** The Administrator of the Drug Enforcement Administration (DEA) is issuing this final order to temporarily schedule three synthetic cathinones under the Controlled Substances Act (CSA) pursuant to the temporary scheduling provisions of 21 U.S.C. 811(h). The substances are 4-methyl-N-methylcathinone (mephedrone), 3,4-methylenedioxy-N-methylcathinone (methylone), and 3,4-methylenedioxypyrovalerone (MDPV). This action is based on a finding by the Administrator that the placement of these synthetic cathinones and their salts, isomers, and salts of isomers into Schedule I of the CSA is necessary to avoid an imminent hazard to the public safety. As a result of this order, the full effect of the CSA and its implementing regulations including criminal, civil and administrative penalties, sanctions and regulatory controls of Schedule I substances will be imposed on the manufacture, distribution, possession, importation, and exportation of these synthetic cathinones.

Schedules of Controlled Substances: Temporary Placement of Three Synthetic Cathinones Into Schedule I, 76 Fed. Reg. 65371-01 (Oct. 11, 2011). The October 11, 2011 order clarified that for purposes of criminal liability, the effective date was October 21, 2011. *Id*.

Here, none of the Defendants has asserted that their admitted conduct on and after October 21, 2011 did not violate federal law and none has attempted to claim any infirmity with the listing of MDPV as a Schedule I controlled substance as of October 21, 2011. *Gagnon Mem*. at 1 ("The term 'controlled substance' is defined in 21 U.S.C. § 802(6) as a drug or other substance, or immediate precursor, included in schedule I, II, III, IV, or V or part B of this subchapter. MDPV became a controlled substance as of Oct. 21, 2011"); *Ellis Mem*. at 1-5; *Ketchen Mem*. at 1, n.1 ("The

substance 3,4 Methylenedioxypyrovalerone was not listed as a schedule I controlled substance until October 21, 2011"). Thus, the Defendants have conceded that their conduct in possessing MDPV with the intent to distribute it and actually distributing MDPV from October 21, 2011 onward constituted the illegal possession and distribution of a Schedule I controlled substance. The dispute is about the status of MDPV before October 21, 2011 and, as Mr. Gagnon has argued, "[t]his date is important because most of the conduct for which the Defendant is being held accountable here predated October 21, 2011". *Gagnon Mem.* at 1.

2. The Controlled Substance Analogue Enforcement Act of 1986: Application to Pre-October 21, 2011 Conduct

Congress enacted the Controlled Substance Analogue Enforcement Act of 1986 (The Analogue Act) "to prevent 'underground chemists' from creating new drugs that have similar effects on the human body as drugs explicitly prohibited under the federal drug laws." *United States v. McFadden*, 753 F.3d 432, 436 (4th Cir. 2014), *cert. granted* ___ U.S. ___, 135 S. Ct. 1039 (2015)[7]; *United States v. Hodge*, 321 F.3d 429, 437 (3d Cir. 2003) (purpose of The Analogue Act is to "make illegal the production of designer drugs and other chemical variants of listed controlled substances that otherwise would escape the reach of the drug laws"). The Analogue Act provides:

> A controlled substance analogue shall, to the extent intended for human consumption, be treated, for the purposes of any Federal law as a controlled substance in schedule I.

[7] The United States Supreme Court granted certiorari to resolve a circuit split as to whether the government must prove that a defendant knew that the substance constituted a controlled substance analogue, an issue not raised in this case.

21 U.S.C. § 813. Except as provided in subparagraph (C) of § 802(32),[8] the term "controlled substance analogue" means a substance:

> (i) the chemical structure of which is substantially similar to the chemical structure of a controlled substance in schedule I or II;
>
> (ii) which has a stimulant, depressant, or hallucinogenic effect on the central nervous system that is substantially similar to or greater than the stimulant, depressant, or hallucinogenic effect on the central nervous system of a controlled substance in schedule I or II; or
>
> (iii) with respect to a particular person, which such person represents or intends to have a stimulant, depressant, or hallucinogenic effect on the central nervous system that is substantially similar to or greater than the stimulant, depressant, or hallucinogenic effect on the central nervous system of a controlled substance in schedule I or II.

21 U.S.C. § 802(32)(A). Together, these provisions have been interpreted to require the Government prove three elements: (1) substantial chemical similarity between the analogue and the controlled substance (the chemical structure element), *see* 21 U.S.C. § 802(32)(A)(i); (2) substantially similar actual, intended, or represented physiological effects on the central nervous system (the pharmacological similarity element), *see* 21 U.S.C. § 802(32)(A)(i), (ii); and, (3) intent that the substance be consumed by humans (the human consumption element), *see id*. § 813. *See McFadden*, 753 F.3d at 436 (citing *United States v. Klecker*, 348 F.3d 69, 71 (4th Cir. 2003)).

Courts have routinely upheld the application of the Analogue Act to analogue chemicals. *See United States v. Sullivan*, 714 F.3d 1104 (8th Cir. 2013) (4-methylmethcathinone); *United States v. Berger*, 553 F.3d 1107 (8th Cir. 2009) (1,4-

[8] The exceptions in subparagraph C are not relevant to the issues before the Court. *See* 21 U.S.C. § 802(32)(C).

butanediol); *United States v. Roberts*, 363 F.3d 118 (2d Cir. 2004) (1,4-butanediol); *United States v. Klecker*, 348 F.3d 69 (4th Cir. 2003) (5-methoxy-N, N-diisopropyltryptamine); *United States v. Washam*, 312 F.3d 926 (8th Cir. 2002) (1,4-butanediol); *United States v. Fisher*, 289 F.3d 1329 (11th Cir. 2002) (gamma-butyrolactone); *United States v. Carlson*, 87 F.3d 440 (11th Cir. 1996) (3,4-Methylenedioxymethamphetamine); *United States v. Hofstatter*, 8 F.3d 316 (6th Cir. 1993) (ephedrine and phenylpropanolamine). Furthermore, courts have applied the Analogue Act to MDPV for pre-October 21, 2011 conduct. *See McFadden*, 753 F.3d at 444-45, *United States v. Orange*, No. 3:12CR00009-4, 2012 WL 2053766, 2012 U.S. Dist. LEXIS 70732 (W.D. Va. May 21, 2012).

Here, the Defendants have not claimed that they are not guilty of violating the Analogue Act by possessing and distributing MDPV. The sole issue is how the statute and the sentencing guidelines treat MDPV; that is, as either a Schedule I or Schedule V analogue.

C. The Guideline Analysis: USSG § 2D1.1

The parties agree that USSG § 2D1.1 applies at sentencing to offenses involving a violation of 21 U.S.C. § 841(a). To calculate a defendant's base offense level under § 2D1.1(a), a court looks to "the offense level specified in the Drug Quantity Table set forth in subsection (c) . . . ." U.S.S.G. § 2D1.1(a)(5). The Drug Quantity Table in subsection (c) does not list MDPV.[9]

[9] The guidelines contain extensive, yet not comprehensive, lists of controlled substances in the Drug Quantity table, §2D1.1(c), and Drug Equivalency Tables, § 2D1.1, Application Note 8(D). MDPV is not referenced in any of these lists.

Application Note 6 of § 2D1.1, titled "Analogues and Controlled Substances Not Referenced in this Guideline", addresses analogues like MDPV not listed in the Drug Quantity Table:

> Any reference to a particular controlled substance in these guidelines includes all salts, isomers, all salts of isomers, and, except as otherwise provided, any analogue of that controlled substance. Any reference to cocaine includes ecgonine and coca leaves, except extracts of coca leaves from which cocaine and ecgonine have been removed. For purposes of this guideline "analogue" has the meaning given the term "controlled substance analogue" in 21 U.S.C. § 802(32). In determining the appropriate sentence, the court also may consider whether the same quantity of analogue produces a greater effect on the central nervous system than the controlled substance for which it is an analogue.
>
> In the case of a controlled substance that is not specifically referenced in this guideline, determine the base offense level using the marihuana equivalency of the most closely related controlled substance referenced in this guideline. In determining the most closely related controlled substance, the court shall, to the extent practicable, consider the following:
>
> (A) Whether the controlled substance not referenced in this guideline has a chemical structure that is substantially similar to a controlled substance referenced in this guideline.
>
> (B) Whether the controlled substance not referenced in this guideline has a stimulant, depressant, or hallucinogenic effect on the central nervous system that is substantially similar to the stimulant, depressant, or hallucinogenic effect on the central nervous system of a controlled substance referenced in this guideline.
>
> (C) Whether a lesser or greater quantity of the controlled substance not referenced in this guideline is needed to produce a substantially similar effect on the central nervous system as a controlled substance referenced in this guideline.

U.S.S.G. § 2D1.1, app. n. 6.

D. Conjunctive or Disjunctive

Before describing the evidence, the Court addresses a preliminary issue: whether the three requirements in the statute, 21 U.S.C. § 802(32)(A), should be read in the conjunctive or disjunctive. In dividing the three subsections, the statute uses the term, "or", not "and". This naturally raises the question as to whether Congress intended that all three elements must be considered in determining whether a particular substance is an analogue or whether only one element is sufficient.

From the Defendants' viewpoint, the statute should be read in the disjunctive. *See Gagnon Mem.* at 2 ("[T]o qualify an analogue of a controlled substance confusion exists regarding whether the suspect substance is to be compared for similarity purposes to the chemical structure **or** pharmacological effect or the chemical structure **and** pharmacological effect of controlled substance" (emphasis in original)). The significance of the Defendants' argument is that, in their view, if the evidence establishes that the analogue is chemically similar to more than one listed controlled substance, then the Court must determine which of the two listed substances is more closely related to the analogue, and if the Court determines that one listed substance is more closely related to the analogue than another, then the statute requires the Court to apply the law and guidelines to the more closely related substance. Here, for example, the Defendants contend that the Court should adopt Ms. Harris' opinion that MDPV is more closely related to pyrovalerone than to methcathinone and must therefore use the statutory and guideline provisions related to pyrovalerone, not methcathinone. Once done, the Defendants urge the Court not to address the next

element, the pharmacological effect, because in their view, it is not necessary to do so.[10]

Although the First Circuit has not addressed the issue, nearly all (or perhaps all) circuit courts that have considered the question have concluded that § 802(32)(A) should be read in the conjunctive. *See United States v. Berger*, 553 F.3d 1107, 1110 (8th Cir. 2009) ("A controlled-substance analogue is a substance 'the chemical structure of which is substantially similar to the chemical structure of a controlled substance in schedule I or II' and which has a similar effect on the central nervous system or is represented or intended to have a similar effect on the central nervous system"); *United States v. Turcotte*, 405 F.3d 515, 522 (7th Cir. 2005); *United States v. Roberts*, 363 F.3d 118, 121 (2d Cir. 2003) (assuming the conjunctive reading is correct because the government did not appeal that portion of the district court's ruling); *United States v. Hodge*, 321 F.3d 429, 436 (3d Cir. 2003); *Klecker*, 348 F.3d at 71; *Washam*, 312 F.3d at 930 n.2; *United States v. McKinney*, 79 F.3d 105, 107-08 (8th Cir. 1996), *vacated on other grounds*, 520 U.S. 1226 (1997); *but see United States v. Brown*, 415 F.3d 1257, 1261 (11th Cir. 2005) (without deciding the issue, accepting the parties' agreement that § 802(32) should be read in the conjunctive); *United States v. Fisher*, 289 F.3d 1329, 1338 (11th Cir. 2002) (declining to answer the question).[11]

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[10] The Defendants' position here is counterintuitive. In other cases, defendants have taken the position that the Government bears a burden beyond chemical similarity and must also demonstrate the pharmacological effect. *See United States v. Fedida*, 942 F. Supp. 2d 1270, 1274-1277 (M.D. Fl. 2013); *United States v. Sole*, 04-10221-RWZ, 2005 U.S. Dist. LEXIS 14185, at *2-3 (D. Mass. July 15, 2005). Typically defendants benefit when the Government's burden is increased, but here the Defendants argue that the Government need only prove one element.

[11] The Seventh Circuit cited a Fifth Circuit case, *United States v. Granberry*, 916 F.2d 1008, 1010 (5th Cir. 1990) as reading the statute in the disjunctive. *See Turcotte*, 405 F.3d at 522. However, one district court in the Fifth Circuit has concluded that, when closely analyzed, the Fifth Circuit actually

One district court in the First Circuit arrived at the same conclusion. *United States v. Sole*, 2005 U.S. Dist. LEXIS 14185, at *2-3 ("[T]he statute is properly read in the conjunctive").

Mr. Ketchen argues that the definition of "analogue" under § 802(32)(A) is "rife with ambiguity." *Ketchen Mem*. at 4. He cites a district court case from Florida, *United States v. Fedida*, 942 F. Supp. 2d 1270, 1274 (M.D. Fla. 2013). Even though the *Fedida* Court concluded that the statute was ambiguous, the Court also concluded that the rule of lenity required that the statute be read in the conjunctive, not disjunctive. *Id.* at 1277.

Based on a strong majority of the circuit courts, this Court concludes that the First Circuit would adopt the majority rule and interpret § 802(32) in the conjunctive.

IV. THE EVIDENCE

The Government and the Defendants have taken different sides of a factual issue: which controlled substance is most closely related to MDPV. The Government contends that MDPV is most closely related to methcathinone, a Schedule I drug; the Defendants say that MDPV is most closely related to pyrovalerone, a Schedule V drug.[12]

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required a conjunctive, not disjunctive reading. *United States v. Reece*, No. 6:12-CR-00146-01; 6:12-CR-00146-02; 6:12-CR-00146-06; 6:12-CR-00146-07; 6:12-CR-146-08; 6:12-CR-00146-09; 6:12-CR-10, 2013 U.S. Dist. LEXIS 103846 (W.D. La. May 10, 2013).

[12] Methcathinone is not listed in the statute as a Schedule I drug. *See generally* 21 U.S.C. § 812. But DEA regulations, published in the Code of Federal Regulations, have classified methcathinone as a Schedule I controlled substance. 21 C.F.R. § 1308.11. These regulations have the force of law. *See United States v. Hussein*, 351 F.3d 9, 12 (1st Cir. 2003). Methcathinone is also specifically referenced in the guidelines. *See* U.S.S.G. § 2D1.1 app. n. 8(D).

In determining the substance for which MDPV is an analogue, the evidence must show that the analogue has a chemical structure substantially similar to the chemical structure of a Schedule I or II controlled substance, that the analogue has an effect on the central nervous system substantially similar to or greater than the effect on the central nervous system of a controlled substance in Schedule I or II, and that the analogue was intended for human consumption. *See* §§ 802(32)(A)(i)-(ii), 813.

A. The Government's Evidence

1. The Grand Jury Testimony of Dr. DiBerardino

In support of its view, the Government provided the Court with the grand jury testimony of Thomas DiBerardino, a chemist with the DEA.[13] *Gov't's Sentencing Ex.* 1, *Test. of Thomas DiBerardino* (ECF Nos. 532, 547, 596). Dr. DiBerardino holds a doctorate in chemistry and has been employed by the DEA for nineteen years. *Id.* at 2:9-3:6. Dr. DiBerardino testified as to his understanding of the rationales underlying the different schedules: (1) Schedule I addresses dangerous drugs without any approved medical uses; (2) Schedule II deals with dangerous drugs that have medical uses; and, (3) Schedules III-V list drugs that are dangerous but not as dangerous as those in Schedules I and II. *Id.* at 5:5-8:21.

Dr. DiBerardino also explained his understanding of analogue drugs and how they fit into the statutory scheme. He testified that "an analogue is a substance that for all intents and purposes has not been specifically scheduled. However, it is

[13] The Defendants have not challenged the expert qualifications of Dr. DiBerardino.

dangerous enough that it could be pretty much substituted for something that is scheduled." *Id.* at 7:2-10. Dr. DiBerardino explained that adding a new drug to one of the schedules takes years and a smart chemist could produce a new drug in less time than the formal scheduling, thus he agreed that one reason for the analogue law is "so that law enforcement can keep pace with the technology that sometimes moves faster than the scheduling process." *Id.* at 8:22-10:25.

Dr. DiBerardino described the use of an analogue classification as a "stopgap measure," noting that it allows the authorities to "take action now to prevent the public from - - from dangers that if we were to slowly use the scheduling process, it would be on the streets for years and years. And it's not a good thing, obviously." *Id.* at 11:1-11.

Dr. DiBerardino also explained the "human consumption" requirement of the law. *Id.* at 11:18-14:5. He noted that there are numerous laboratories and businesses that endeavor to invent new compounds that are beneficial to people, ranging from new medicines to new types of fertilizer. *Id.* at 11:1-12:15. But a new compound not intended for human consumption is outside the reach of The Analogue Act. *Id.* at 12:8-14:5.

Dr. DiBerardino also discussed the chemical structure element. *Id.* at 14:8-15:10. He explained that the chemists examine the new substance to determine whether it has "characteristics, that molecular structure" substantially similar to a scheduled substance, and to be considered an analogue, it "has to have certain characteristics that are in common." *Id.* at 15:3-10.

Turning to the pharmacological similarity element, Dr. DiBerardino agreed that the analogue substance has to be a stimulant, depressant or hallucinogen and have an impact on the central nervous system that is substantially similar to a Schedule I or Schedule II listed drug. *Id.* 15:16-21.

Dr. DiBerardino grand jury testimony was directed to the chemical structure element and, after providing a whirlwind course in basic chemistry, he explained both in his testimony and in slides that in his view the chemical structure of MDPV is substantially similar to methcathinone, a Schedule I controlled substance. *Id.* 15:1 1-25:20.

2. The Grand Jury Testimony of Dr. Prioleau

The Government also introduced the grand jury testimony of Cassandra Prioleau, a drug science specialist with the DEA.[14] *Gov't's Sentencing Ex.* 2, *Test. of Cassandra Prioleau* (ECF Nos. 532, 547, 596) (*Prioleau Test.*). Dr. Prioleau holds a doctorate in pharmacology and has worked at the DEA since October 2008. *Id.* at 2:6-3:8. Dr. Prioleau is an expert in the pharmacological effects of emerging drugs, comparing the new drug's pharmacological effect to a Schedule I or II drug to determine whether they are substantially similar in effect. *Id.* at 4:6-9. She testified that she is familiar with the pharmacological effect of MDPV on the central nervous system. *Id.* at 4:10-25. She characterized MDPV as having a "stimulant effect" on the central nervous system, causing the person to experience symptoms such as

[14] The Defendants have not challenged the expert qualifications of Dr. Prioleau.

hyperactivity, increased energy, anxiety, aggression, euphoria, increased blood pressure, increased heart rate, and increased body temperature. *Id.* at 5:3-14.

Dr. Prioleau testified that she is also familiar with methcathinone, a Schedule I substance. *Id.* at 6:5-12. She said that methcathinone also has a stimulant effect on the central nervous system. *Id.* at 6:13-16. Comparing MDPV with methcathinone, she testified:

> MDPV, like methcathinone, has a stimulant effect on the central nervous system that is substantially - - the effects of MDPV are substantially similar in the central nervous system to that of methcathinone.

Id. at 6:17-23. She agreed that if someone takes MDPV or methcathinone, he or she is going to experience "similar types of hyperactivity, euphoria, sleeplessness, excitability." *Id.* at 6:24-7:5. She concluded by saying that "MDPV has a stimulant effect on the central nervous system that is substantially similar to that of methcathinone, a [S]chedule I substance." *Id.* at 2-6.

3. The August 2011 DEA Report and Proposal to Temporarily List MDPV as a Schedule I Substance

The Government also presented a report and appendix from the DEA that summarized the reasons for its recommendation to temporarily list MDPV, among other substances, as a Schedule I substance. *Gov't's Sentencing Ex.* 5, *Background, Data and Analysis of Synthetic Cathinones: Mephedrone (4-MMC), Methylone (MDMC) and 3,4-Methylenedioxypyrovlerone (MDPV)* (Aug. 2011) (ECF Nos. 532, 547, 596). This Report confirmed a rapid growth in the abuse of MDPV and noted that the compounds have "no known medical use in the United States." *Id.* at 3.

In terms of MDPV's chemistry, the Report stated:

> MDPV is closely related in structure to phenethylamines such as the Schedule I and II stimulants methamphetamine, cathinone, and methcathinone. MDPV is also structurally related to pyrovalerone, which is a psychoactive drug that was used to treat chronic lethargy and fatigue. There is no evidence that MDPV has a legitimate non-research use and according to HHS there are no approved drug products or new drug applications that contain MDPV.

Id. at 6. The Report documents numerous incidents involving emergency room visits and some deaths attributed to MDPV. *Id.* at 12-16. Noting that a "substance meeting the statutory requirements for temporary scheduling (21 U.S.C. [§] 811(h)(1)) may only be placed in Schedule I," the Report recommended that MDPV and similar compounds be so listed, because MDPV and the two other synthetic cathinones "have a high potential for abuse, no currently accepted medical use in treatment in the United States, and [a] lack [of] accepted safety for use under medical supervision." *Id.* at 2.

B. The Defendants' Evidence

1. The Yohannan Article

The Defendants disagree that methcathinone should be compared to MDPV. Mr. Gagnon and Mr. Ellis contend that substance should be pyrovalerone.[15] Mr. Ellis has taken the lead among the Defendants in presenting the Court with a countervailing evidentiary argument. He attached to his memorandum the March 2010 Microgram Journal article authored by Messrs. Yohannan and Bozenko, two

[15] Mr. Ketchen argues that his base offense level should not be calculated using the marijuana equivalent of methcathinone, but offers no alternative substance.

employees of the DEA's Special Testing and Research Laboratory. *Yohannan Article* at 12-15. In the article, the authors describe MDPV:

> MDPV and MDPK are both abbreviations for 3,4-Methylenedioxypyrovalerone (Figure 1). MDPV was first synthesized as part of a class of stimulants in 1969. MDPV is the methylenedioxy analogue of pyrovalerone, a Schedule V stimulant first synthesized in 1964. Pyrovalerone, available under the trade names Centroton and Thymergix, is used as an appetite suppressant or for the treatment of chronic fatigue.
>
> MDPV is currently unscheduled in the United States. MDPV is found as a white or light tan powder. Users report the development of an odor when left exposed to the air. There are currently no known studies on the effects of MDPV on humans or proper dosing. MDPV is commonly described as boosting a user's libido, however it is also associated with extreme anxiety at higher doses. There are no known deaths due to the use of MDPV.

Id. at 12. The article goes on to set out the data resulting from subjecting MDPV to various chemical tests, including a Fourier Transform Infrared Spectroscopy, a gas chromatography/mass spectrometry, nuclear magnetic resonance spectroscopy, and ultraviolet spectrophotometry. *Id.* at 12-14.

2. The Heather Harris Report

In his memorandum, Mr. Ellis asserted that "[t]he question of what listed drug is most closely related to MDPV is a factual question, and Mr. Ellis should have the opportunity to present evidence on his own behalf, and to challenge the Government's evidence." *Ellis Mem*. at 3. He stated that he was prepared to offer "further expert evidence at a hearing to establish that MDPV is not only an analogue to pyrovalerone, but that it is more closely related to pyrovalerone than it is to methcathinone. *Id.* The Court, taking Mr. Ellis at his word, ordered him to submit an offer of proof setting

forth the expert's name and curriculum vitae, and a detailed explanation of the basis for the expert's anticipated testimony. *Offer of Proof Order*.

Mr. Ellis submitted a report written by Heather L. Harris and Ms. Harris' curriculum vitae. *See Harris C.V.*; *Harris Report*. Ms. Harris holds a juris doctor and master of forensic science, and has been a forensic chemistry consultant since 2006. *Harris C.V.* at 1. Ms. Harris reviewed the structural indicators of MDPV, methcathinone, and pyrovalerone, and concluded that "with regard to chemical structure, MDPV is most closely related to pyrovalerone, not methcathinone." *Harris Report* at 1. She submits that the "substantially similar" standard set forth in § 802(32)(A) "has no quantifiable meaning" and results in opinions based on "little more than subjective feelings about the appearance of two-dimensional diagrams." *Id*. at 1. Therefore, she looked to other sources to find an approach for evaluating the structural similarity of different compounds. *Id*. at 2. That approach entails an evaluation of the functional groups, core structure, and presence and location of reactivity-modifying double bonds of particular molecules. *Id*. In her opinion, MDPV and methcathinone do not share the same core structure, whereas pyrovalerone contains all of the same core structure elements as MDPV. *Id*. at 2-3. She opined that although methcathinone, MDPV, and pyrovalerone share one functional group, MDPV has two functional groups that methcathinone does not have. *Id*. at 3. Finally, she compared the presence and location of double bonds present in all three compounds, and concluded that although methcathinone, MDPV and pyrovalerone share an identical double bond structure. *Id*. at 3-4.

C. The Government's Reply

Anticipating that the Defendants would present the Yohannan article in response to its evidence, the Government submitted a copy of an email from Mr. Yohannan dated January 30, 2015 in which Mr. Yohannan wrote that the article he authored with Mr. Bozenko "was not intended to address, nor did it in any way undertake, a controlled substance analogue determination under the United States Code." *Gov't's Sentencing Ex.* 4, *Email from Joshua C. Yohannan to Solette A. Magnelli* (Jan. 30, 2015). He stresses that he had "formed no opinion on whether MDPV is an analogue under the definitions or provisions of the United States Code or the United States Sentencing Guidelines." *Id.*

V. DISCUSSION

A. The Significance of the Dispute

Before addressing the parties' arguments, the Court explains the gravity of the dispute in this case. For many controlled substances, the guidelines provide a conversion table, which translates a specific drug quantity into its marijuana equivalent. For example, one gram of methcathinone is equivalent to 380 grams of marijuana. U.S.S.G. § 2D1.1, app. n. (8)(D). However, when dealing with a "controlled substance not referenced in the drug quantity table", the guidelines direct that the "Drug Equivalency Tables" be used "to convert the quantity of the controlled substance involved in the offense to its equivalent quantity of marihuana." U.S.S.G. § 2D1.1, app. note 8(A)(i). Pyrovalerone, a Schedule V substance, is not listed in the drug equivalency tables, and is not referenced anywhere in the guidelines. Therefore,

Application Note 6 directs the Court to determine which substance pyrovalerone is "most closely related to" that is actually referenced in the guidelines.

Significantly, although the Defendants argue that the Court should use pyrovalerone to calculate their base offense levels, none submitted any evidence regarding which substance is "most closely related" to pyrovalerone. They have fallen short, therefore, of providing a substance that could be converted to a marijuana equivalent quantity and accordingly, to a base offense level.

The guideline commentary, however, answers this question. As pyrovalerone is a Schedule V controlled substance without a direct guideline equivalency reference, the default provisions would apply and would significantly cap his guideline range:

> For certain types of controlled substances, the marihuana equivalencies in the Drug Equivalency Tables are "capped" at specified amounts (e.g., the combined equivalent weight of all Schedule V controlled substances shall not exceed 2.49 kilograms of marihuana.

U.S.S.G. § 2D1.1 app. n. 8(B).

Taking Mr. Ellis as an example highlights the significant difference in the resulting base offense level if the Court used pyrovalerone instead of methcathinone as the proper analogue of MDPV.[16] Mr. Ellis is being held accountable for 9,450.36 grams of MDPV. That translates into 3,591,136.8 grams of methcathinone, which is 3,591 kilograms of marijuana equivalent. Because the drug quantity is at least 3,000 kilograms but less than 10,000 kilograms of marijuana, it results in a base offense

[16] This is for illustrative purposes only. In its Presentence Report, the Probation Office recommended that Mr. Ellis be held responsible for other drug quantities that impact his base offense level, and it has also recommended other violations and adjustments that affect his total offense level. Finally, for purposes of this illustration, the Court has included all the drug quantity even though Mr. Ellis possessed a certain quantity of MDPV after October 21, 2011, when the law changed.

level of 32, which carries with it a guideline sentence range of 151 to 188 months at his criminal history category of III. Conversely, if the MDPV is considered a Schedule V controlled substance, then the marijuana weight is capped at 2.49 kilograms. Because the drug quantity is at least 1 kilogram but less than 2.5 kilograms of marijuana, it results in a base offense level of 8, which carries with it a guideline sentence range of only 6 to 12 months, again at criminal history category III. Similar, dramatic differences in the calculated guideline sentence would also apply to Mr. Ketchen and Mr. Gagnon.

B. The Defendants' Admission

During their respective Rule 11 hearings, each Defendant was presented with a prosecution version of the offense and each Defendant admitted:

> [T]here existed a conspiracy to possess with intent to distribute and distribute [ ] prior to October 21, 2011, a mixture or substance containing a detectable amount of MDPV, a controlled substance analogue as defined in Title 21, United States Code, Section 802(32), with intent for human consumption as provided in Title 21, United States Code, Section 813 . . .

Gov't's Version of the Offense at 1 (ECF No. 371) (Ketchen); *Gov't's Version of the Offense* at 1 (ECF No. 418) (Gagnon); *Amended Gov't's Version of the Offense* at 1 (ECF No. 425) (Ellis). A literal application of this admitted language to the Defendants' cases forecloses the arguments they are making here, because they have admitted that prior to October 21, 2011, the MDPV involved in the conspiracy was "a controlled substance analogue as defined in Title 21, United States Code Section 802(32)." By admitting that the pre-October 21, 2011 MDPV they distributed met this statutory definition, they admitted that the MDPV they distributed fulfilled the

chemical structure, pharmacological similarity, and human consumption elements in the statute, which are incorporated into the guidelines by Application Note 6.[17] *See* U.S.S.G. § 2D1.1, n. 6 ("For the purposes of this guideline, 'analogue' has the meaning given the term 'controlled substance analogue' in 21 U.S.C. § 802(32)").

None of the Defendants has moved to withdraw this part of his guilty plea despite the admission argument having been prominently raised by the Government; based on these admissions alone, the Court could stop here. However, the Court proceeds with its analysis on the assumption that if the Court determined that the merits of the Defendants' motions warranted a markedly reduced sentence for each Defendant than the ones recommended in the Presentence Reports, the Court would likely be receptive if the Defendants acted to avoid such a result.

C. The Facts

1. MDPV and the First Element: Chemical Structure

Under Application Note 6 to USSG § 2D1.1, an "analogue" means "controlled substance analogue" as defined in 21 U.S.C. § 802(32). The first element of § 802(32) focuses on the chemical structure of the analogue.

Here, there is evidence that MDPV's chemical structure is similar to the chemical structure of both methcathinone and pyrovalerone. The Yohannan article

[17] Mr. Gagnon points out that "controlled substance" is defined in 21 U.S.C. § 802(6) as a "drug or other substance, or immediate precursor, included in schedule I, II, III, IV, or V of part B of this subchapter." *Gagnon Mem.* at 1. However, for the purposes of sentencing, the guidelines adopted the definition contained in § 802(32), not § 802(6). The Court concludes that there is no confusion about whether the definition of "controlled substance" under § 802(6) applies to Application Note 6 of § 2D1.1. It does not.

focuses on pyrovalerone and concludes that "MDPV is the methylenedioxy analogue of pyrovalerone." *Yohannan Article* at 1. The DEA report states:

> MDPV is closely related in structure to phenethylamines such as the Schedule I and II stimulants methamphetamine, cathinone, and methcathinone. MDPV is also structurally related to pyrovalerone, which is a psychoactive drug that was used to treat chronic lethargy and fatigue.

The Yohannan article and the DEA report agree that MDPV bears a chemical structure relationship to pyrovalerone. Ms. Harris' letter reaches a similar conclusion: that MDPV's chemical structure is closely related to pyrovalerone. *Harris Report* at 4 ("MDPV is most closely related to pyrovalerone in chemical rather than metcathinone").

Ms. Harris goes further, however. She opines that the "structural indicators" for both methcathinone and MDPV reveal that "more differences than similarities exist between methcathinone and MDPV, and most of those differences are significant." *Id.* at 4. She concludes that "MDPV should not be considered a controlled substance analogue of methcathinone under USSG § 2D1.1". *Id.*

Based on Dr. DiBerardino's testimony, it would be expected that the chemical structure of MDPV could be closely related to more than one compound. Dr. DiBerardino explained that the analysis of the molecular structure of a compound starts by isolating the so-called "skeleton" of the compound and then identifying the carbons, hydrogens, and other molecules attached to the core. From Dr. DiBerardino's explanation, the Court concludes that even if "MDPV is the methylenedioxy analogue of pyrovalerone", this does not mean that MDPV is not also

closely related in chemical structure to "Schedule I and II stimulants methamphetamine, cathinone, and methcathinone."

Assuming that the chemical structure of MDPV is more closely analogous to pyrovalerone than to methamphetamine, cathinone, or methcathinone, this does not end the discussion. Section 802(32) does not provide that the analogue must be the most similar to the illegal compound; it provides that the analogue compound must be "substantially similar to the chemical structure of a controlled substance." § 802(32). So long as the chemical structure of MDPV is "substantially similar" to the chemical structure of "methamphetamine, cathinone, and methcathinone," it meets the chemical structure requirement of § 802(32).

2. MDPV and the Second Element: Pharmacological Effect

The second element under § 802(32) addresses the pharmacological effect of the analogue. Dr. Prioleau's testimony confirms that MDPV's pharmacological effect is substantially similar to that of methcathinone; MDPV therefore meets this element of § 802(32). As noted earlier, Dr. Prioleau agreed that if someone takes MDPV or methcathinone, he or she is going to experience "similar types of hyperactivity, euphoria, sleeplessness, excitability." *Prioleau Test.* at 6:24-7:5. She concluded by saying that "MDPV has a stimulant effect on the central nervous system that is substantially similar to that of methcathinone, a [S]chedule I substance." *Id.* at 2-6. The Defendants have presented no evidence on the pharmacological effect criterion. Ms. Harris does not address this issue in her report.

The pharmacological similarity element analysis is critical under the federal statute and the guidelines. As Dr. DiBerardino observed, one chemical may share similar chemistries to a host of other chemicals. In the Court's view, substantial chemical similarity is a necessary but not sufficient requirement for determining whether the chemical in question is an analogue under the drug laws. For a compound to be deemed illegal, it is not only its chemistry but also its impact on the human body and mind that must be assessed. In other words, to fit within § 802(32) and § 2D1.1 of the guidelines, an analogue compound must fulfill all of the § 802(32) and § 813 elements. A compound, like pyrovalerone, could well be similar in chemical structure to MDPV, but might not affect people the same way bath salts have affected people. Thus, to qualify as an analogue compound, the guidelines require more than just chemical similarity.

Here, the Government has demonstrated that MDPV has pharmacologically similar impact as methcathinone on human beings and therefore, it has presented convincing evidence on this essential element. The Defendants have offered no rebuttal on this critical point: the pharmacological similarity between MDPV and pyrovalerone and between MDPV and methcathinone.

Based on the evidence now before the Court, the Court finds that the Government has demonstrated that MDPV is a "controlled substance analogue" to methcathinone, a Schedule I controlled substance, and the Court finds that the

evidence does not support the Defendants' assertion that MDPV is a "controlled substance analogue" to pyrovalerone.[18]

D. The Law

1. Application Note 6 Applies to Analogues Such As MDPV

In their memoranda, Messrs. Ketchen and Gagnon maintain that USSG § 2D1.1 does not apply because MDPV was not listed as a controlled substance before October 21, 2011. *Gagnon Mem.* at 3 n.1 ("Prior to Oct. 21, 2011, MDPV was not by definition a controlled substance and therefore is not covered by Comment 6"); *Ketchen Mem.* at 3 ("In analyzing the pre October 21, 2011 conduct, MDPV was not a controlled substance listed. Comment 6 analysis does not expressly apply because the analysis only applies to controlled substances not referenced in the guidelines").

The plain language of Application Note 6 defeats the Defendants' argument. The title of Application Note 6 expressly addresses analogues, like MDPV, not referenced in the guidelines. U.S.S.G. § 2D1.1, app. n. 6 ("Analogues and Controlled Substances Not Referenced in this Guideline"). Specifically, the text provides that "[a]ny reference to a particular controlled substance in these guidelines includes . . . any analogue of that controlled substance." *Id.* Therefore, contrary to Defendants' assertion, Application Note 6 does not solely apply to listed controlled substances.

Furthermore, the Defendants' focus on whether MDPV was a listed controlled substance prior to October 21, 2011 misses the point that the application note addresses analogues in the first paragraph. The district court in the Eastern District

[18] The Court does not separately address the third element, human consumption. Presumably, all three drugs, MDPV, pyrovalerone and methcathinone, meet that criterion.

of Virginia rejected a similar argument. *See Gov't's Sentencing Ex.* 3, *United States v. Webb-Harvey*, No. 4:13cr45, at 2:

> The Court concludes that based on the most appropriate and natural reading of this application note, the first paragraph should be applied initially in a case such as this one where the defendant has been convicted of an offense involving an analogue. The second paragraph should only apply where the defendant is convicted of an offense involving a material that is a controlled substance included in the statutory schedules but that is not listed in the Guideline's drug quantity or drug equivalency tables.

This Court agrees with this conclusion. The Defendants' argument badly misreads the scope of Application Note 6.

2. The Definition of "Controlled Substance Analogue" in Application Note 6 Includes MDPV

The first paragraph of Application Note 6 contains critical language directing the Court to the correct analytic path for controlled substance analogues:

> For the purposes of this guideline, "analogue" has the meaning given the term "controlled substance analogue" in 21 U.S.C. § 802(32).

U.S.S.G. § 2D1.1. n. 6. The guideline expressly incorporates the language of § 802(32)(A)(i), (ii), and (iii). Subsection (i) serves as an example:

> [T]he term "controlled substance analogue" means a substance (i) the chemical structure of which is substantially similar to the chemical structure of a controlled substance in schedule I or II . . . .

21 U.S.C. § 802(32)(i). The last phrase, "substantially similar to . . . a controlled substance <u>in schedule I or II</u>" (emphasis supplied), which also appears in subsections (ii) and (iii), deals a fatal blow to Defendants' argument that MDPV can be considered a controlled substance analogue of pyrovalerone.

Even if the Court were to assume that the Defendants are correct and MDPV has a chemical structure similar to pyrovalerone, the guidelines do not allow a comparison between the alleged analogue and pyrovalerone because, as the Defendants concede, pyrovalerone is a Schedule V substance. In other words, the Commission has determined that to constitute an analogue under the guidelines, the chemical structure of the analogue must be similar to the chemical structure of a Schedule I or II controlled substance. If not, the analogue does not meet the definition of "controlled substance analogue" under the guidelines. The district court for the District of Arizona considered and rejected the same argument that the Defendants make here.

> In defining a "controlled substance analogue," the statute requires only that it be substantially similar in chemical structure to, and substantially similar or greater in physiological effect than, "a controlled substance in schedule I or II." 21 U.S.C. § 802(32)(A). The statute does not require a comparison to substances in other schedules, nor does it require that the analogue have its closest similarity to a substance in schedule I or II. As a result, the Court concludes that a substance that satisfies the requirements of § 802(32)(A) is a controlled substance analogue, and does not lose that status because it has a chemical structure that is more similar to a schedule V controlled substance.

United States v. Lane, No. CR-12-01419-PHX-DGC, 2013 WL 3759903, at *3 (D. Ariz. July 16, 2013). The Court concurs with this reasoning and conclusion. Where, as here, there is evidence that the chemical structure of MDPV is substantially similar to the chemical structure of a Schedule I drug and a Schedule V drug, it is only the comparison to the Schedule I drug that counts.

Ms. Harris' report actually highlights the flaw in the Defendants' position. Acknowledging that the statute restricts "the comparison to a Schedule I or II

controlled substance", she complains that the restriction is "a creation of law and is not based on science." *Harris Report* at 1-2. Unfortunately for the Defendants, however, they are before a court of law, not a panel of scientists. The statute reflects the will of Congress and, faced with a choice between what Ms. Harris believes the law should be and what Congress has determined that the law is, the Court is required to apply the congressional directive.

3. The Analysis Under Application Note 6 of the Most Closely Related Controlled Substance Referenced in the Guidelines

Finally, the parties spar over the application of the second paragraph of Application Note 6.[19] The Government argues that because MDPV is not specifically referenced in the guidelines, the Court must determine the "most closely related controlled substance" using the analysis in paragraph two of Application Note 6. *Gov't's Mem*. at 5. The Government asserts that the second paragraph of Application Note 6 applies, and that methcathinone is the "most closely related substance" to MDPV. *Gov't's Mem*. at 7.

Mr. Gagnon contends that this portion of Application Note 6 does not apply because MDPV is not a "controlled substance that is not specifically referenced" in the guidelines. *Gagnon Mem*. at 3. He refers to the "definition of controlled substance", (presumably is a reference to 21 U.S.C. § 802(6)) and observes that this

[19] Mr. Gagnon argues that the definition of controlled substances under § 802(6) includes substances listed in Schedules I through V, and that pyrovalerone may thus be included in a determination of which substance is most closely related to MDPV. The Court addressed the applicability of § 802(6), however, and rejects his argument.

definition "includes substances listed in Schedules I through V" and concludes that this means that "one is not limited to schedules I through V." *Id.*

Again, the Court concludes that the plain language of paragraph two of Application Note 6 settles the issue. Specifically, the text makes clear that paragraph two applies "[i]n the case of a controlled substance that is not specifically referenced in this guideline . . . ." U.S.S.G. § 2D1.1 app. n. 6. The instant case does not involve a controlled substance not specifically referenced in the guidelines, and thus the second paragraph does not apply. Even though Mr. Gagnon is correct on this point, it is of no moment because when analyzed under paragraph one of Application Note 6, the Court is limited to "the meaning given the term 'controlled substance analogue" in 21 U.S.C. § 802(32)", which is restricted to Schedules I and II, not to "controlled substance" in 21 U.S.C. § 802(6), which is not so restricted.

Other than paragraph one's limitation to Schedules I and II, the determination of the substance for which MDPV is an analogue under § 802(32)(A)(i)-(ii) requires a nearly identical analysis to paragraph two of Application Note 6, namely the chemical and pharmacological similarity issues described above that the Court has resolved against the Defendants.

VI. JOINT PRE-SENTENCE CONFERENCE

The parties request a joint pre-sentence conference, with counsel for Mr. Ketchen and co-defendants Ryan Ellis and Jacob Gagnon present, to review the Court's findings and prepare accordingly for sentencing.

VII. CONCLUSION

The Court concludes that a preponderance of the evidence supports the determination that MDPV is a controlled substance analogue of methcathinone, and that an evidentiary hearing on the matter is not necessary.[20] The Court therefore concludes that methcathinone is the appropriate substance to use in calculating the Defendants' base offense level. The Court grants the Defendants a joint pre-sentence conference to review these findings and prepare for sentencing.

SO ORDERED.

/s/ John A. Woodcock, Jr.
JOHN A. WOODCOCK, JR.
UNITED STATES DISTRICT JUDGE

Dated this 11th day of June, 2015

Plaintiff

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Defendant (2)

[20] The Court finds support in the caselaw for its determination that MDPV is a controlled substance analogue of methcathinone. *See United States v. McFadd*en, 753 F.3d 432, 445 (4th Cir. 2014); *United States v. Orange*, No. 3:12CR00009-4, 2012 WL 2053766 (W.D. Va. May 21, 2012). In contrast, the scant caselaw discussing the relationship between MDPV and pyrovalerone suggests that the two substances have different pharmacological effects on humans. *See United States v. Lawton*, 2015 WL 136381 (D. Vt. Jan. 9, 2015) (citing anecdotal evidence indicating that "MDPV is at least 6-12 times *more potent* than . . . pyrovalerone" (emphasis in original)).

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